EM2
8022 EMULATION BOARD

Portable 4.25″ x 2.75″ microcomputer circuit assembly

Connects directly into prototype system through Intel® 8022* pin compatible socket

Provides Intel® 8755A — 2K x 8 EPROM

EPROM functional and electrical equivalent of Intel® 8022 — single component 8-bit computer

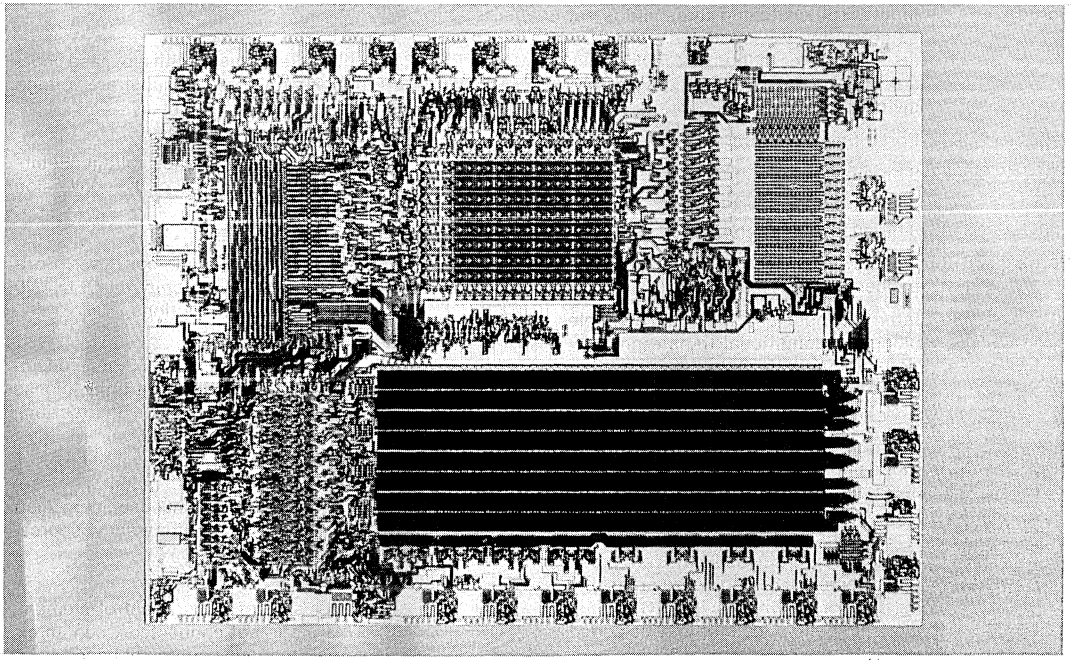
The EM2 emulator board is a ready-to-use 4.25″ x 2.75″ microcomputer circuit assembly that emulates the Intel® 8022 single chip microcomputer. The emulator board is designed to plug directly into the 8022 socket. No interfacing and interconnection cables are necessary. Power is obtained from the user's system.

The EM2 emulator board provides the user a full EPROM functional and electrical equivalent of the 8022 single component 8-bit microcomputer.

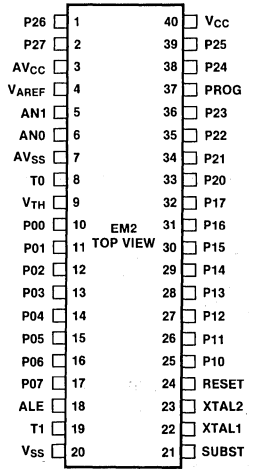
The EM2 emulator board consists of an Intel® 8022 emulator chip and an Intel® 8755A, providing the EM2 emulator board with a 2K x 8 EPROM program memory which can be programmed and erased repeatedly during hardware and software development.

The 8022E emulator chip is a modified version of the 8022 intended for use in design support systems. Instead of using resident ROM memory as the 8022, the 8022E uses an external 2K EPROM 8755A memory for program storage, allowing easy program modification.

*See Intel® 8022 Data Sheet.

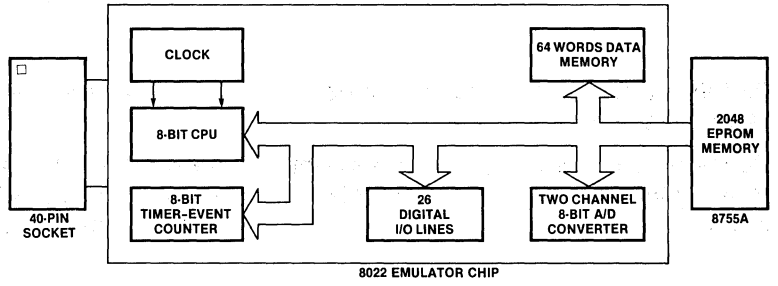


40-PIN SOCKET CONFIGURATION



□ PIN 1
SQUARE SOLDER PAD

EM2 BLOCK DIAGRAM



PIN DESCRIPTION

Designation	Pin #	Function
V_{SS}	20	Circuit GND potential.
V_{CC}	40	+5V circuit power supply.
PROG	37	Output strobe for Intel® 8243 I/O expander.
P00–P07 Port 0	10–17	8-bit open-drain port with comparator inputs. The switching threshold is set externally by V_{TH}. Optional pull-up resistors may be added via ROM mask selection. (The emulator board has switch selection of this option.)
V_{TH}	9	Port 0 threshold reference pin.
P10–P17 Port 1	25–32	8-bit quasi-bidirectional port.
P20–P27	33–36	8-bit quasi-bidirectional port.
Port 2	38–39 1–2	P20–P23 also serve as a 4-bit I/O expander for Intel® 8243.
T0	8	Interrupt input and input pin testable using the conditional transfer instructions JT0 and JNT0. Initiates an interrupt following a low level input if interrupt is enabled. Interrupt is disabled after a reset.
T1	19	Input pin testable using the JT1 and JNT1 conditional transfer instructions. Can be designated the timer/event counter input using the STRT CNT instruction. Also serves as the zero-cross detection input to allow zero-crossover sensing of slowly moving AC inputs. Optional pull-up resistor may be added via ROM mask selection.
RESET	24	Input used to initialize the processor by clearing status flip-flops and setting the program counter to zero.
AV_{SS}	7	A/D converter GND potential. Also establishes the lower limit of the conversion range.
AV_{CC}	3	A/D +5V power supply.
SUBST	21	Substrate pin used with a bypass capacitor to stabilize the substrate voltage and improve A/D accuracy.
V_{AREF}	4	A/D converter reference voltage. Establishes the upper limit of the conversion range.
AN0, AN1	6,5	Analog inputs to A/D converter. Software selectable on-chip via SEL AN0 and SEL AN1 instructions.
ALE	18	Address Latch Enable. Signal occurring once every 30 input input clocks (once every single cycle instruction), used as an output clock.
XTAL1	22	One side of crystal, inductor, or resistor input for internal oscillator. Also input for external frequency source. (Not TTL compatible.)
XTAL2	23	Other side of timing control element. This pin is not connected when an external frequency source is used.

On the EM2 Board:

The Intel® 8755A EPROM can be programmed using any of the modules listed in Table 1.

Module	Description
UPP-103	Universal PROM Programmer. Requires UPP-955, which includes 8755A Personality Card with 40-pin adapter socket.
PROMPT-48	Intellec® MCS-48 Microcomputer Design Aid. Requires PROMPT-475 Programming Adapter.
PROMPT-80/85	Intellec® 8080/8085 Microcomputer Design Aid. Requires PROMPT-975 Programming Adapter.

Table 1. 8755A Proramming Module

The 8755A EPROM is erased when exposed to light with wavelengths shorter than approximately 4000 Angstroms (Å). Sunlight and certain fluorescent lamps have wavelengths in the 3000Å to 4000Å range. If the 8755A is to be exposed to sunlight or room fluorescent lighting for extended periods, then opaque labels should be placed over the window to prevent unintentional erasure.

The recommended erasure procedure is exposure to ultraviolet light which has a wavelength of 2537Å. The integrated dose (UV intensity multiplied by exposure time) for erasure should be a minimum of 15W-sec/cm. The erasure time with this dosage is approximately 15 to 20 minutes using an ultraviolet lamp with a 12,000μ W/em^2 power rating. Place the 8755A within one inch of the lamp during erasure. Some lamps include a filter which should be removed before erasure.

SPECIFICATIONS

Operating Environment

Intel® 8755A EPROM Programming

UPP-103
PROMPT-48
PROMPT-80/85

Intellec Microcomputer Development System

Software

8048 Assembler
ISIS-II Diskette Operating System

Equipment Supplied

EM2 Printed Circuit Board
EM2 Reference Manual

Physical Characteristics

Width: 2.75 in. (6.98 cm)
Height: 4.25 in. (10.79 cm)
Depth: 1.5 in. (3.81 cm)
Weight: 0.5 lb (0.23 kg)

Electrical Characteristics

DC Power

$V_{CC} = 5V \pm 5\%$
$I_{CC} = 300$ mA (maximum)

Environmental Characteristics

Operating Temperature — 0 to 55°C

Operating Humidity — Up to 95% relative humidity without condensation

ORDERING INFORMATION

Part Number	Description
MDS-EM2	8022 Emulation Board